ACE PLUS CORP.

EX-G016A

2x8 HDMI 1.3 over Single CAT5 Cascading Distribution Amplifier

User Manual

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Safety and Notice

The **EX-G016A 2x8 HDMI 1.3 over Single CAT5 Cascading Distribution Amplifier** has been tested for conformance to safety regulations and requirements, and has been certified for international use. However, like all electronic equipments, the EX-G016A should be used with care. Please read and follow the safety instructions to protect yourself from possible injury and to minimize the risk of damage to the unit.

- Follow all instructions and warnings marked on this unit.
- Do not attempt to service this unit yourself, except where explained in this manual.
- Provide proper ventilation and air circulation and do not use near water.
- Keep objects that might damage the device and assure that the placement of this unit is on a stable surface.
- Use only the power adapter and power cords and connection cables designed for this unit.
- Do not use liquid or aerosol cleaners to clean this unit. Always unplug the power to the device before cleaning.

Introduction

The **EX-G016A 2x8 HDMI 1.3 over Single CAT5 Cascading Distribution Amplifier** allows you to distribute one of the two HDMI/DVI video sources up to 8 separate HDTV displays including one remotely cascade output via Cat-5/5e cost effective cable. This splitter offers the most flexible solution by which the high definition video and high quality audio can be transmitted to different local locations through HDMI cables and also to the next stage over a long distance without degrading the quality. The cascade ability allows pure digital video and audio broadcast station by station and therefore make extending HDMI compliant video and audio anywhere feasible.

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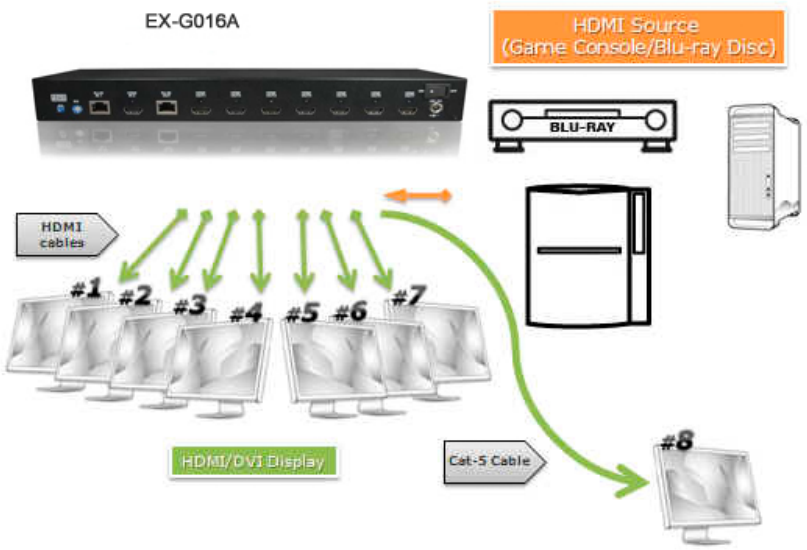

Features

- State-of-the-art Silicon Image (founder of HDMI) chipset embedded for upmost compatibility and reliability
- HDMI 1.3c compliant
- HDCP compliant
- HDMI video distribution to up to 7 displays and one CAT5e Receiver or cascade to another EX-G016A
- Acts as a 2x1 HDMI switch plus a 1x8 HDMI over CAT5 splitter
- Minimizes the cable skew by adjustable 8-level equalization control
- Regenerates the HDMI signal
- Supports default HDMI EDID and has the ability to learn the EDID of displays
- Up to 60m (200ft) at 1080i and 40m (130ft) at 1080p through Cat-5e cables
- Input up to 15m (50ft) using HDMI cables
- Outputs up to 15m (50ft) using HDMI cables
- Pure unaltered uncompressed 7.1ch digital HDMI over LAN cable transmission
- Allows cascading
- Perfectly integrated with other HDMI over CAT5 series products
- 1U rack mountable with interlocking power adapter for fixedness

The length depends on the characteristics and quality of the cables. Higher resolutions and longer transmission distances require low skew cables (<25ns/100m) for best performance. Unshielded CAT6 with metal RJ-45 connectors is recommended.

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Specifications & Package Contents

Model Name		EX-G016A	EX-G076A	EX-G076B
Technical				
Role of usage		2x8 distribution amplifier Transmitter [TX]	Receiver [long range RX]	Receiver [short range RX]
HDMI compliance		HDMI 1.3c		
HDCP compliance		0Yes		
Video bandwidth		Single-link 340MHz [10.2Gbps]		
Video support		480i / 480p / 720p / 1080i / 1080p60		
Transmission		Full HD (1080p) – 40m (130ft) [CAT5e] / 50m (165ft) [CAT6] HD (720p/1080i) – 50m (165ft) [CAT5e] / 60m (200ft) [CAT6]		
Audio support		Surround sound (up to 7.1ch) or stereo digital audio		
Equalization		N/A	8-level digital	None
Input TMDS signal		1.2 Volts [peak-to-peak]		
Input DDC signal		5 Volts [peak-to-peak, TTL]		
ESD protection [EX-G016A / EX-G076A]		[1] Human body model — ±15kV [air-gap discharge] & ±8kV [contact discharge] [2] Core chipset — ±8kV		
PCB stack-up		4-layer board [impedance control — differential 100Ω; single 50Ω]		
Input		1x HDMI 1x RJ-45	1x RJ-45	1x RJ-45
Output		7x HDMI 1x RJ-45	1x HDMI	1x HDMI
HDMI connector		Type A [19-pin female]	Type A [19-pin female]	Type A [19-pin male]
RJ-45 connector		WE/SS 8P8C with 2 LED indicators		
DIP switch		2-pin DIP	None	None
Mechanical				
Housing		Metal case	Metal case	Plastic mold
Dimensions [L x W x H]	Model	340 x 110 x 44mm [1'1.4"x4.3"x1.7"]	85 x 60 x 25mm [3.3"x2.4"x1"]	45 x 25 x 20mm [1.8"x1"x0.8"]
	Package	545 x 230 x 110mm [1'9.5"x9.1"x4.3"]	270 x 175 x 80mm [10.6"x6.9"x3.2"]	170 x 115 x 40mm [6.7"x4.5"x1.6"]
	Carton	570 x 580 x 260mm [1'10.5"x1'10.9"x10.2"]	450 x 370 x 300mm [1'5.7"x1'2.6"x11.8"]	450 x 370 x 300mm [1'5.7"x1'2.6"x11.8"]
Weight	Model	324g [11.4oz]	154g [5.4oz]	22g [0.8oz]
	Package	1.9kg [4.2 lbs]	453g [1 lb]	90g [3.2oz]
Fixedness		1U rack-mount with ears Wall hanging holes	Wall-mount case upon request	N/A
Power supply		5V 4A DC	5V 2A DC	None
Power consumption		13 Watts [max]	1 Watt [max]	0.5 Watt [max]
Operation temperature		0~40°C [32~104°F]		
Storage temperature		-20~60°C [-4~140°F]		
Relative humidity		20~90% RH [no condensation]		
Package Contents		1x EX-G016A 2x Rack-mounting ears 1x 5V power adapter 1x User Manual	1x EX-G076A 1x 5V power adapter 1x User Manual	1x EX-G076B 1x User Manual

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Panel Descriptions

Front Panel

1. **1.2a/1.3a**: Output format LED indicator [Green: HDMI 1.3 / Red: HDMI 1.2]
2. **Format Sel**: Push button for HDMI output format selection
3. **IN 1/IN 2**: Input LED indicator [Green: HDMI input / Red: RJ-45 input]
4. **IN Sel**: Push button for input HDMI source selection

Rear Panel

5. DIP Switch: EDID/Audio setting [see following section]
6. **EQ**: Rotary control for equalizer setting [see following section]
7. **RJ-45 IN 1**: for cascading from another EX-G016A or SP-5022
8. **HDMI IN 2**: for connecting to video source, SP-5012, SP-5018, or another EX-G016A
9. **RJ-45 OUT**: for connecting to display through EX-G076A or EX-G076B; or for cascading to another SP-5022 or EX-G016A
10. **HDMI OUT1-HDMI OUT7**: for connecting to display through HDMI cable or through Cat-5e cable with EX-G076B attached; or for cascading to another SP-5012, SP-5018, or EX-G016A.
11. **+5V DC power**: connect to 5V 4A DC interlocking power adapter
12. Power ON/OFF switch

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DIP Switch

Pin#1 Position	OFF [⬆]	ON [⬇]
EDID Mode	Use Default EDID	Use learned EDID[1]

Pin#2 Position	OFF [⬆]	ON [⬇]
Audio Mode	7.1 Channel[2]	Stereo

Note

[1] ***Set pin#1-ON[⬇] first and then connect the HDMI Input to HDMI display thru HDMI cable. Wait for 20 seconds. The Recording Procedure will be finish. If you want to learn the EDID for another equipped display, you must set pin#1-OFF[⬆] and repeat the procedure.***

[2] ***If the equipped display shows video but without audio, please try to set audio to 2 channel.***

Rotary Control

In order to adapt the CAT5 cable, EX-G016A offers 8 level equalization control on the received HDMI signal. The strongest equalization is applied while the knob stops at number 0, while the weakest equalization happens at number 7. It is recommended to switch from 7 to 0 to find the optimal visual experience.

HDMI Output Format Selection

When input signal exists, the output format LED turns on. If the input HDMI source is HDMI 1.3 format, you can set the output format to HDMI 1.2 mode and Red LED will be on. If the input HDMI source is HDMI 1.2, the output format is always set to HDMI 1.2.

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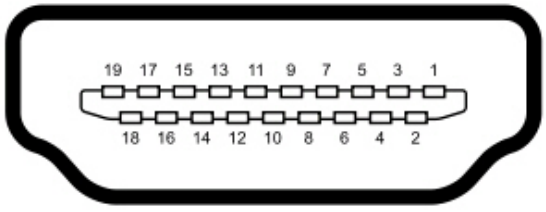
Hardware Installation

1. Connect Cat-5e cable if using any Cat-5e HDMI video transmitter as cascading source
2. Connect HDMI input to HDMI compliant sources (such as a Blu-ray Disc player)
3. Connect all HDMI outputs to the HDMI displays
4. Connect RJ-45 output to HDMI over CAT5 receiver through Cat-5e cable
5. Plug in 5V 4A DC power supply.
6. Power on the EX-G016A
7. Power on the HDMI displays.
8. Power on the HDMI source(s).

HDMI Pin Definition



Type A (Receptacle) HDMI

Pin 1	TMDS Data2+	Pin 8	TMDS Data0 Shield	Pin 15	SCL
Pin 2	TMDS Data2 Shield	Pin 9	TMDS Data0–	Pin 16	SDA
Pin 3	TMDS Data2–	Pin 10	TMDS Clock+	Pin 17	DDC/CEC Ground
Pin 4	TMDS Data1+	Pin 11	TMDS Clock Shield	Pin 18	+5 V Power
Pin 5	TMDS Data1 Shield	Pin 12	TMDS Clock–	Pin 19	Hot Plug Detect
Pin 6	TMDS Data1–	Pin 13	CEC		
Pin 7	TMDS Data0+	Pin 14	Reserved (N.C. on device)		

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Notice

1. If the DVI or HDMI device requires the EDID information, please use EDID Reader/Writer to retrieve and provide DVI/HDMI EDID information.
2. All HDMI over CAT5 transmission distances are measured using Belden CAT5e 125MHz LAN cable and ASTRODESIGN Video Signal Generator VG-859C.
3. The transmission length is largely affected by the type of LAN cables, the type of HDMI sources, and the type of HDMI display. The testing result shows solid LAN cables (usually in bulk cable 300m/1000ft form) can transmit a lot longer signals than stranded LAN cables (usually in patch cord form). Shielded STP cables are better suit than unshielded UTP cables. A solid UTP CAT5e cable shows longer transmission length than stranded STP CAT6 cable. For long extension users, solid LAN cables are your only choice.
4. EIA/TIA-568-B termination (T568B) for LAN cables is recommended for better performance.
5. To reduce the interference among the unshielded twisted pairs of wires in LAN cable, you can use shielded LAN cables to improve EMI problems, which is worsen in long transmission.
6. Because the quality of the LAN cables has the major effects in how long transmission distance will be made and how good is the received display, the actual transmission length is subject to your LAN cables. For resolution greater than 1080i or 1280x1024, a CAT6 cable is recommended.
7. If your HDMI display has multiple HDMI inputs, it is found that the first HDMI input [HDMI input #1] generally can produce better transmission performance among all HDMI inputs.

Performance Guide for HDMI over LAN Cable Transmission

Performance rating		Type of LAN cable		
Wiring	**Shielding**	**CAT5**	**CAT5e**	**CAT6**
Solid	Unshielded (UTP)	★★★	★★★★	★★★★★
	Shielded (STP)	★★★	★★★	★★★★
Stranded	Unshielded (UTP)	★	★★	★★
	Shielded (STP)	★	★	★★
Termination		Please use **EIA/TIA-568-B** termination (**T568B**) at any time		

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Limited Warranty

The SELLER warrants the **EX-G016A 2x8 HDMI 1.3 over Single CAT5 Cascading Distribution Amplifier** to be free from defects in the material and workmanship for 1 year from the date of purchase from the SELLER or an authorized dealer. Should this product fail to be in good working order within 1 year warranty period, The SELLER, at its option, repair or replace the unit, provided that the unit has not been subjected to accident, disaster, abuse or any unauthorized modifications including static discharge and power surges.

Unit that fails under conditions other than those covered will be repaired at the current price of parts and labor in effect at the time of repair. Such repairs are warranted for 90 days from the day of reshipment to the BUYER. If the unit is delivered by mail, customers agree to insure the unit or assume the risk of loss or damage in transit. Under no circumstances will a unit be accepted without a return authorization number.

The warranty is in lieu of all other warranties expressed or implied, including without limitations, any other implied warranty or fitness or merchantability for any particular purpose, all of which are expressly disclaimed.

Proof of sale may be required in order to claim warranty. Customers outside Taiwan are responsible for shipping charges to and from the SELLER. Cables are limited to a 30 day warranty and cable must be free from any markings, scratches, and neatly coiled.

The content of this manual has been carefully checked and is believed to be accurate. However, The SELLER assumes no responsibility for any inaccuracies that may be contained in this manual. The SELLER will NOT be liable for direct, indirect, incidental, special, or consequential damages resulting from any defect or omission in this manual, even if advised of the possibility of such damages. Also, the technical information contained herein regarding the EX-G016A features and specifications is subject to change without further notice.

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